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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/554,481

10/24/2005

Diane M. Artman

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05/28/2008

THE LUBRIZOL CORPORATION

ATTN: DOCKET CLERK, PATENT DEPT.

29400 LAKELAND BLVD.

WICKLIFFE, OH 44092

EXAMINER

OLADAPO, TAIWO

ART UNIT

PAPER NUMBER

1797

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/554,481

**Applicant(s)**

ARTMAN ET AL.

**Examiner**

TAIWO OLADAPO

**Art Unit**

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date 10/24/2005
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. Claim 9 is objected to because of the following informalities: The claim states “alkyl groups of the ZDDP are at least about 50% of secondary.” The sentence is incomplete but is understood to mean: alkyl groups of the ZDDP are at least about 50% of secondary alcohol alkyl groups, as explained in applicant’s specification [0056]. It is suggested that the applicant amend the claims to recite the phrase in quote as “alkyl groups of the ZDDP are at least about 50% of secondary alcohol alkyl groups” or using similar terminology to make the claim complete and unambiguous. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1 – 10, 12 – 16, are rejected under 35 U.S.C. 103(a) as being unpatentable over Fetterman, Jr. et al. (US 5,102,566) in view of Davis (US 4,582,618)

6. In regards to claim 1, 5, Fetterman teaches a composition and a process for lubricating a compression ignited (or diesel) internal combustion engine by supplying a lubricant comprising a less than 1 wt. % (from 0 to 1%) of sulfur, and less than 1.2 wt. % of sulfated ash lubricant having a lubricating oil, nitrogen-free sulfurized antiwear, and 1 to 10% nitrogen containing dispersant (Abstract; column 1 line 68; column 5 lines 25 – 37, 63 – 68; column 39 lines 6 – 8). Diesel engine vehicles as recited by Fetterman are sump lubricated engines (column 1 lines 20 – 25). Fetterman teaches sulfurized olefin as antioxidants, but does not particularly teach nitrogen free sulfurized olefin antiwear. Fetterman does not particularly teach a lubricant comprising low phosphorus. Davis teaches a low phosphorus, low sulfur lubricating oil (Title). Davis teaches that low phosphorus (i.e. less than 0.1 %) contents are desirable in lubricants because phosphorus tends to poison catalytic converters used to control emissions in gasoline engines (column 1: line 67 – column 2 line 2). Davis also teaches sulfurized Diels-Alder adducts (olefins) which are useful as extreme pressure and antiwear additives in lubricating oils (column

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1 lines 16 – 35; column 2 lines 5 – 6). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the ingredients of Davis with that of Fetterman in order to create lubricating oil with extreme pressure and antiwear additives, and low phosphorus content that will not poison catalytic converters of engines.

7. In regards to claim 2, Fetterman and Davis combined teach the process, wherein lubricant comprises overbased or excess of metal in detergent (Fetterman, column 43 lines 63 – 67).

8. In regards to claim 3, Fetterman and Davis combined teach the process; wherein lubricant comprises overbased detergent inhibitor salicylate (Fetterman, column 40 lines 13 – 29).

Detergent inhibitors are detergents that also perform the added function of preventing oil oxidation and metal corrosion.

9. In regards to claim 4, Fetterman and Davis combined teach the process of lubricating a heavy duty diesel engine (Fetterman, column 39 lines 1 – 3).

10. In regards to claim 6, Fetterman and Davis combined teach the composition comprising sulfurized  $C_4 - C_{20}$  olefins (Davis, column 4 lines 41 – 59).

11. In regards to claim 7, Fetterman and Davis combined teach the composition, wherein nitrogen dispersant is succinimide dispersant (Fetterman, column 52 Table 1: Polyisobutenyl succinimide dispersant).

12. In regards to claim 8, Fetterman and Davis combined teach the composition, wherein Zinc dialkyldithiophosphate (ZDDP) is 1.35 vol. or wt. % (Fetterman, column 52 Table 1). Fetterman recites that an effective amount of dithiophosphate can be used (column 6 lines 8 – 9). It would have been obvious to one of ordinary skill in the art at the time of the invention to

optimize the amount of ZDDP in the lubricants to more or less of the recited value as to provide an effective amount of antiwear to the lubricating oil.

13. In regards to claim 9, Fetterman and Davis combined teach the composition comprising ZDDP wherein at least 50 % of alkyl groups are derived from secondary alcohol (Fetterman, column 37 line 52 – column 38 line 25). The compound of formula XXVIII is made from a reaction of alcohol and phosphorus pentasulfide wherein the R<sub>1</sub> and R<sub>2</sub> groups are each independently a secondary (i.e. isopropyl) group.

14. In regards to claim 10, Fetterman and Davis combined teach the composition comprising hindered phenol (i.e. 2-tert-butyl-4-6-dimethylphenol etc.) antioxidant (Fetterman, column 30 lines 59 – 68). The phenols listed are sterically hindered or hindered phenols.

15. In regards to claim 12, Fetterman and Davis combined teach the composition comprising 1.35 wt. % ZDDP antiwear (Fetterman, column 52 Table 1).

16. In regards to claim 13, Fetterman and Davis combined teach the composition wherein detergent ranges in ratio with antiwear (column 40 lines 13 – 29). Since the amount of antiwear can be optimized to an effective amount, the amount of detergent used will also be optimized to an effective amount based on the ratio provided.

17. In regards to claim 14, Fetterman and Davis combined teach the composition wherein phosphorus contains less than 0.1 wt. % as previously stated. Less than 0.1 is from 0 up to 0.1 wt. %.

18. In regards to claim 15, Fetterman and Davis combined teach the composition of claim 1 as previously stated.

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19. In regards to claim 16, Fetterman and Davis combined teach the concentrate comprising an overlapping ranges of 5 to 40 wt. % of lubricating oil, 7 to 12 % antiwear, at least 2 % nitrogen containing dispersant, an overbased detergent selected from salicylates, 0.1 wt. % or less of phosphorus, 0.01 to 0.6 wt. % sulfated ash (SASH) and less than 1 wt. % of sulfur (Fetterman, Abstract, column 39 lines 21 – 29, 60 – 68; column 40 lines 13 – 29; column 54 lines 50 – 54), (Davis, Abstract).

20. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fetterman, Jr. et al. (US 5,102,566) in view of Davis (US 4,582,618) and further in view of Schenck et al. (US 3,791,985)

21. In regards to claim 11, Fetterman and Davis combined teach the composition but do not teach hindered ester-substituted phenol used as an antioxidant. Schenck teaches a lubricating oil composition containing phosphate esters of thio ethers of phenols (column 1 lines 15 – 44). Schenck teaches that the phosphate-ester-thio-ether phenol compound of formula (I) exhibits good antiwear and extreme pressure properties. The compound of formula (I) is a sterically hindered ester of phenol capable of functioning as an antioxidant in a lubricant. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the ingredients of Schenck to the invention of Fetterman and Davis combined in order to increase the antiwear and extreme pressure properties of the lubricating oil.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TAIWO OLADAPO whose telephone number is (571)270-3723. The examiner can normally be reached on 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571)272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TO

/Glenn A Caldarola/  
Acting SPE of Art Unit 1797